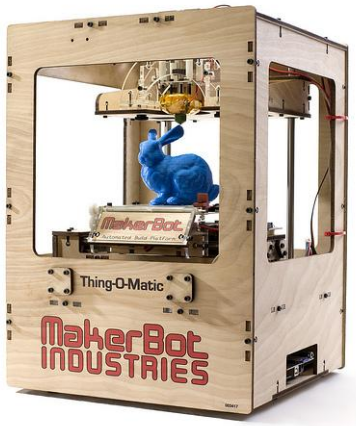


How to Use Makerbot
Thing-O-Matic

Hardware and Software Training

Dec 2012

Stepstruder MK6+
The printing portion of the Thing-O-Matic uses a stepper motor to draw in a plastic filament, which is heated to a controlled temperature. The melted plastic is then pushed through the nozzle in a thin stream, building up the object in layers about 0.3 millimeters thick.

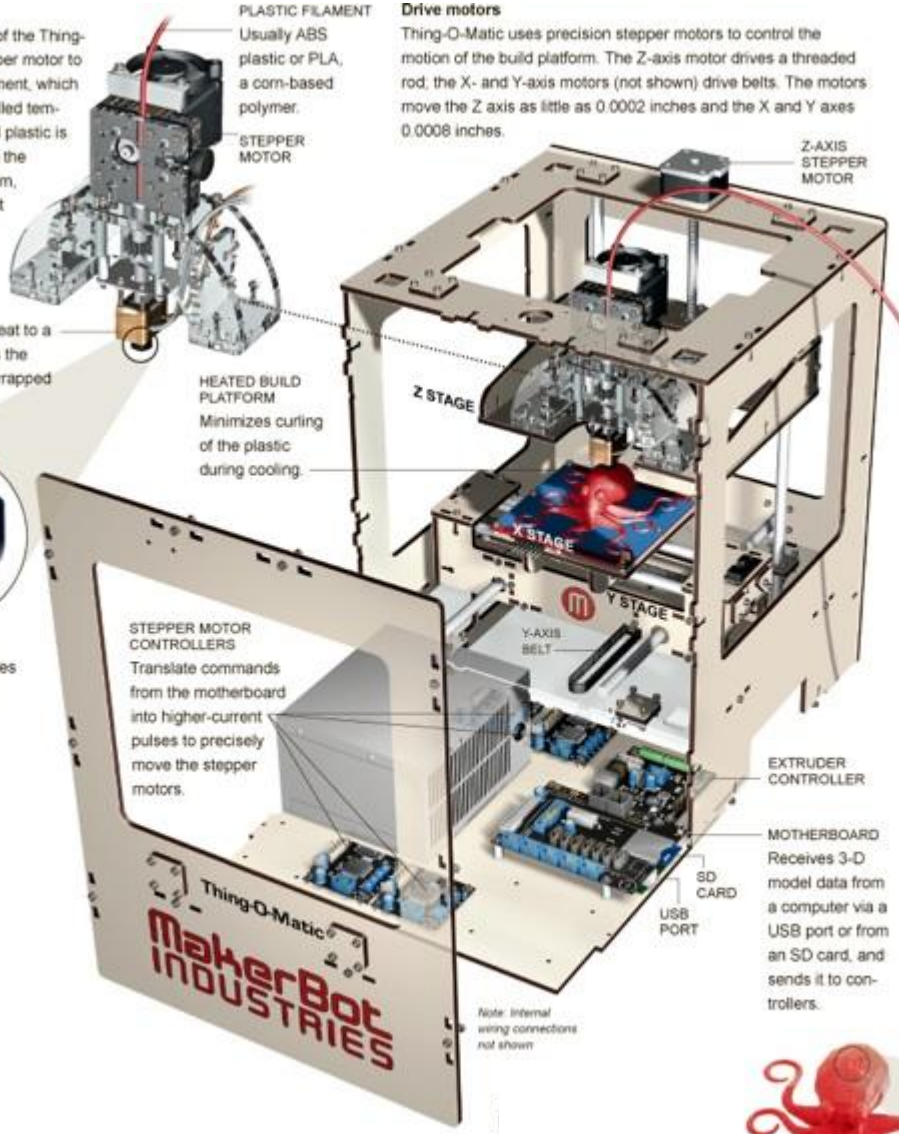
PLASTIC FILAMENT
Usually ABS plastic or PLA, a corn-based polymer.

STEPPER MOTOR

HOT END
A cartridge applies heat to a metal core that melts the plastic. The core is wrapped in insulation.

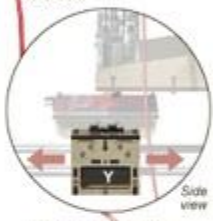
PRINT NOZZLE
Melted plastic extrudes from the tip to form layers of the object being printed.

Drive motors
Thing-O-Matic uses precision stepper motors to control the motion of the build platform. The Z-axis motor drives a threaded rod, the X- and Y-axis motors (not shown) drive belts. The motors move the Z axis as little as 0.0002 inches and the X and Y axes 0.0008 inches.



Three axes of motion
To build an object in three dimensions, the printer uses stages, each moving along a different axis.

The **X STAGE** moves the build platform side to side...



...while the **Y STAGE** moves it front to back, creating a single layer.

The **Z STAGE** moves the stepstruder vertically, creating additional layers, which can be seen on the object below.

Content

- **You Need**
- **Software Installation**
- **Digital Model Preparation**
- **Generate Gcode**
- **Build s3g. File**
- **Start MakerBot**
- **Start to print**
- **Take printed model out**
- **Source**

You Need

1. Computer
2. Makerbot
3. ABS filament
4. USB cable
5. Bot power cord
6. SD card
7. Tweezer

Software Installation

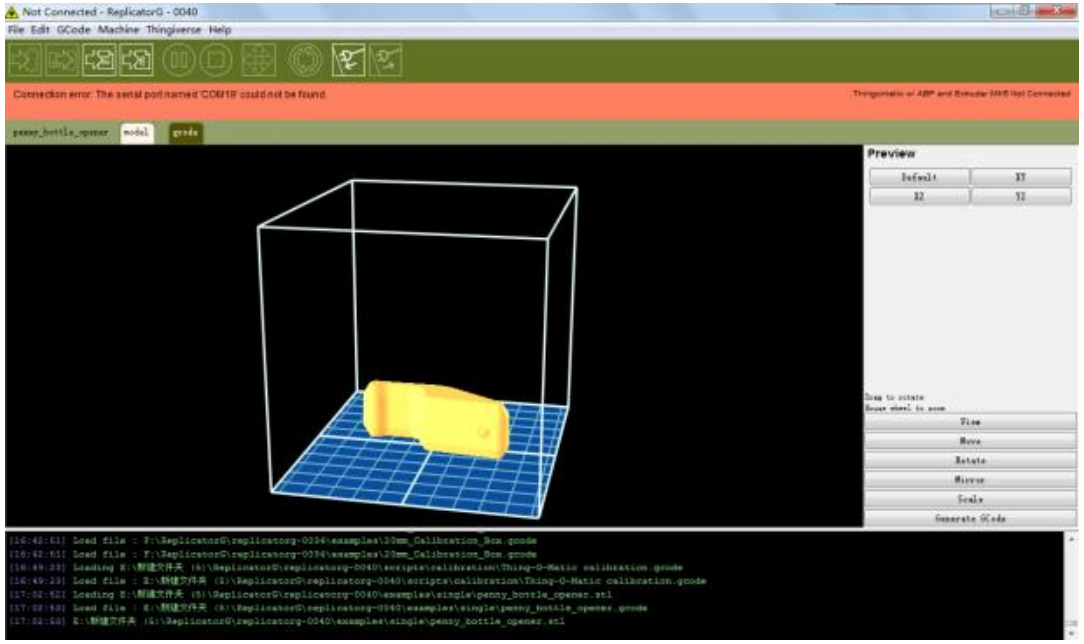
- Download:

  http://code.google.com/p/replicatorg/downloads/detail?name=replicatorg-0034-windows.zip&can=2&q=

- Install ReplicatorG

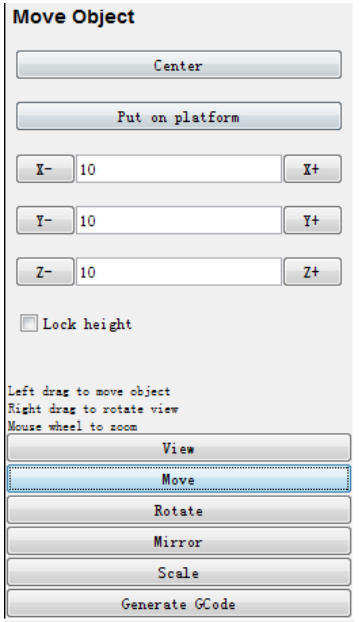
Digital Model Preparation

- Open .stl file in ReplicatorG. Or double-click on the .stl file directly, and it will automatically open in ReplicatorG.



Digital Model Preparation

- Position your model in ReplicatorG.
  Click **Move** button
  Click **Center** button
  Click **Put on Platform Button**



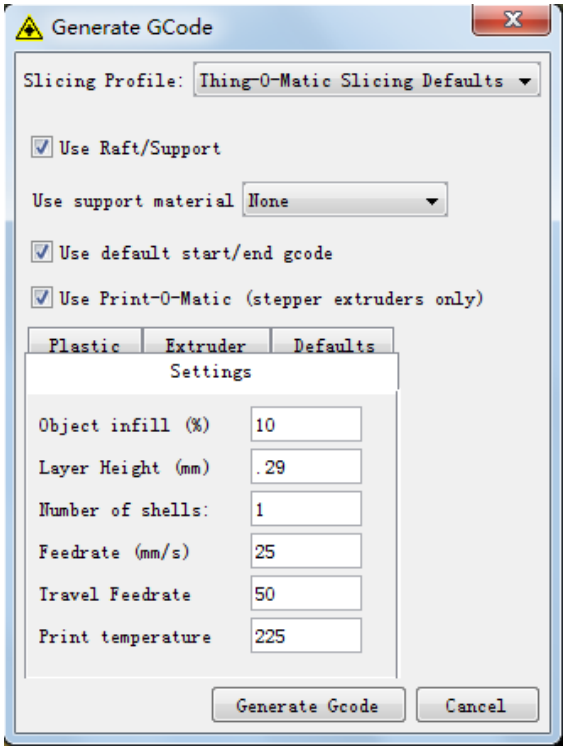
(The model should now lie flat and centered on the blue rectangle. The blue rectangle represents the build platform inside the MakerBot.)

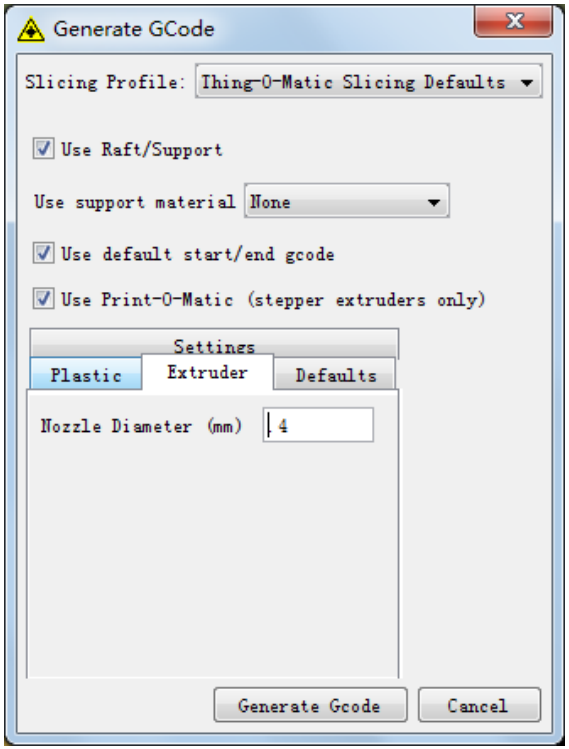
Digital Model Preparation

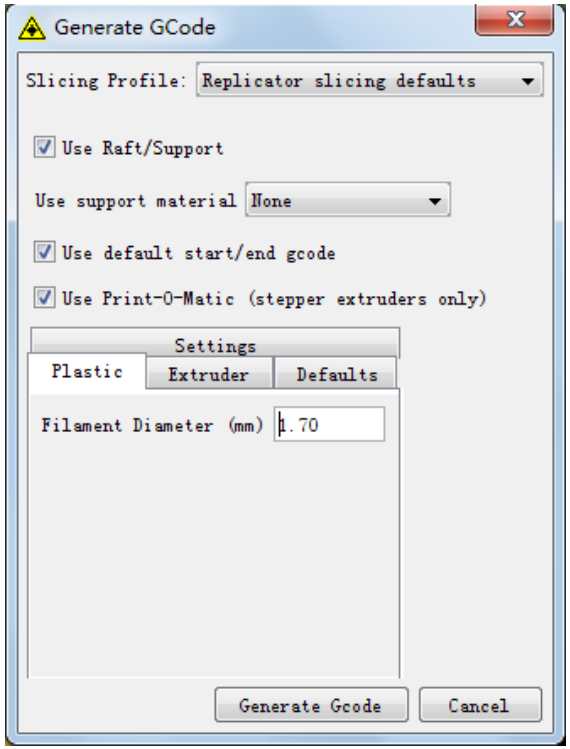
- You can also adapt your model through **Rotate**, **Mirror** and **Scale** button before **Center** and **Put on Platform**.
- Parameters could be adapted according to your requirements on the buttons' panel.

Generate GCode

- Click **Generate GCode** button or  icon.
- Use settings as follows to start:

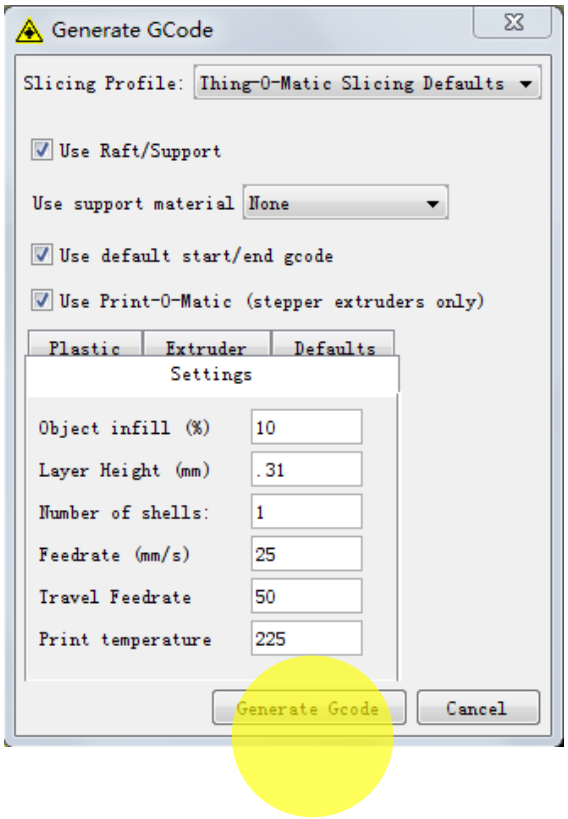


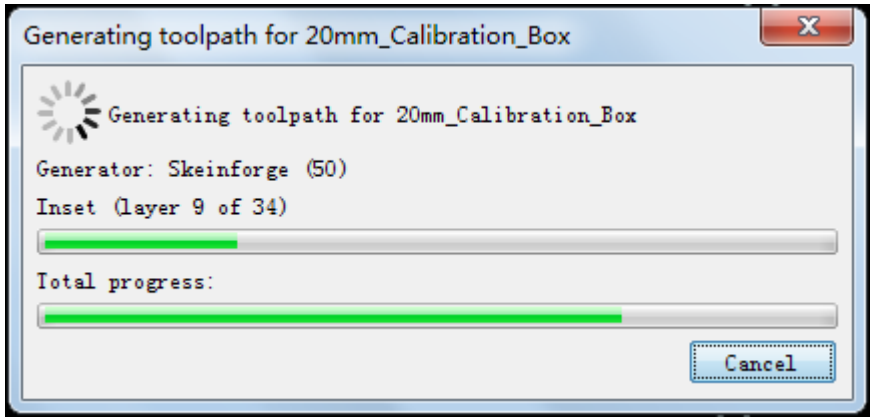




Generate GCode

- Click **Generate** as follows

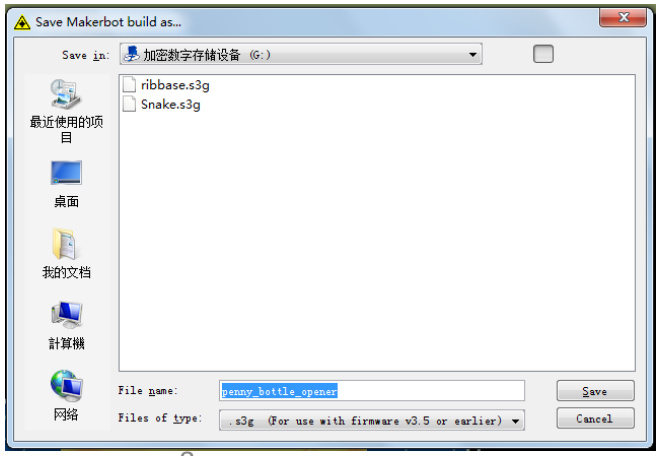




Build s3g file

- Put SD card in the SD card slot.
- Click the Build to File icon 

(Build to File turns your STL into an s3g file. S3g is a format the MakerBot can understand. Save your s3g file to the SD card.)



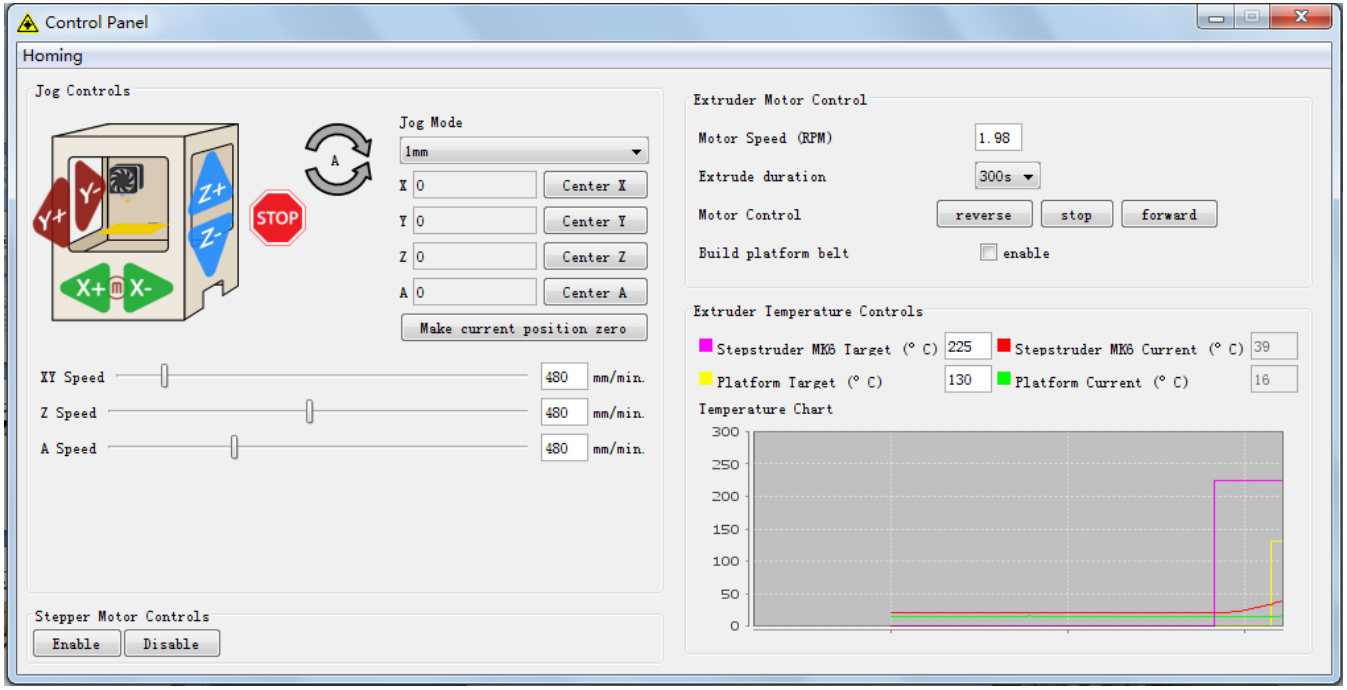
Start MakerBot

- Plug in the black power cord and turn on the MakerBot.
- Plug in the USB cable.

  (flat end goes in your computer, square end goes in the MakerBot)
- Click the Connect icon. 

Start MakerBot

- If you are using new ABS filament, click Control Panel icon  or press Ctrl + J or Select Control Panel from Machine Menu. And use setting as follows to start:



Start MakerBot

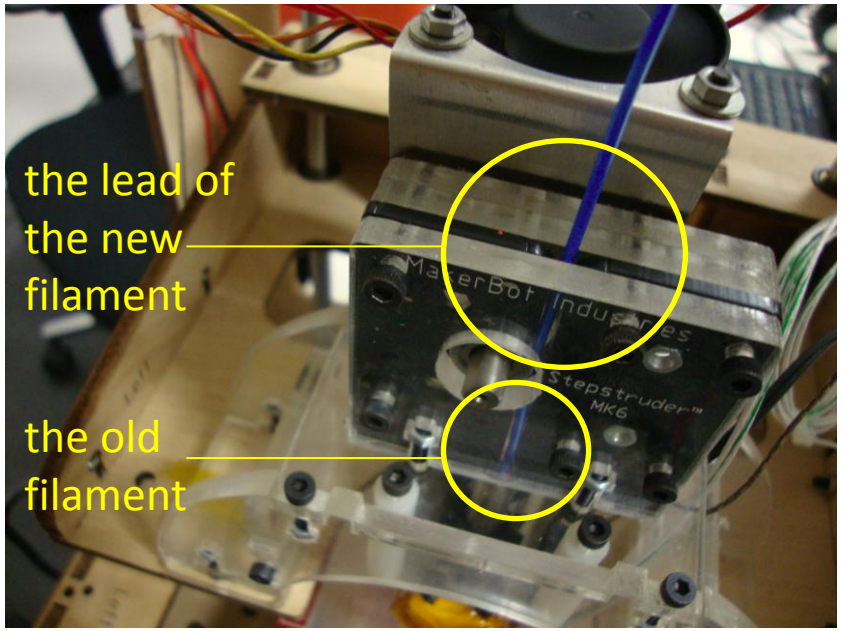
- Once Target Temp is reached, click **forward** to heat and extrude the old filament segment. Once the end the segment has sunken down to the inside of the plastic channel, click **stop**. Then fit the lead of the new filament inside. Don't take the old filament out, just insert the new filament right above it. Click the "**Forward**" button to push the new filament through. And loose the filament for material suply.

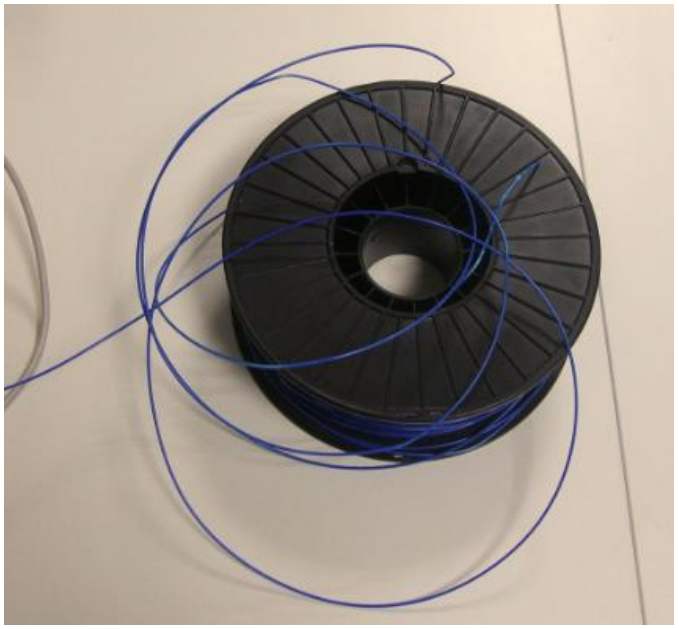
  (as the following pictures)

Start MakerBot

- Select your print material (ABS filament)

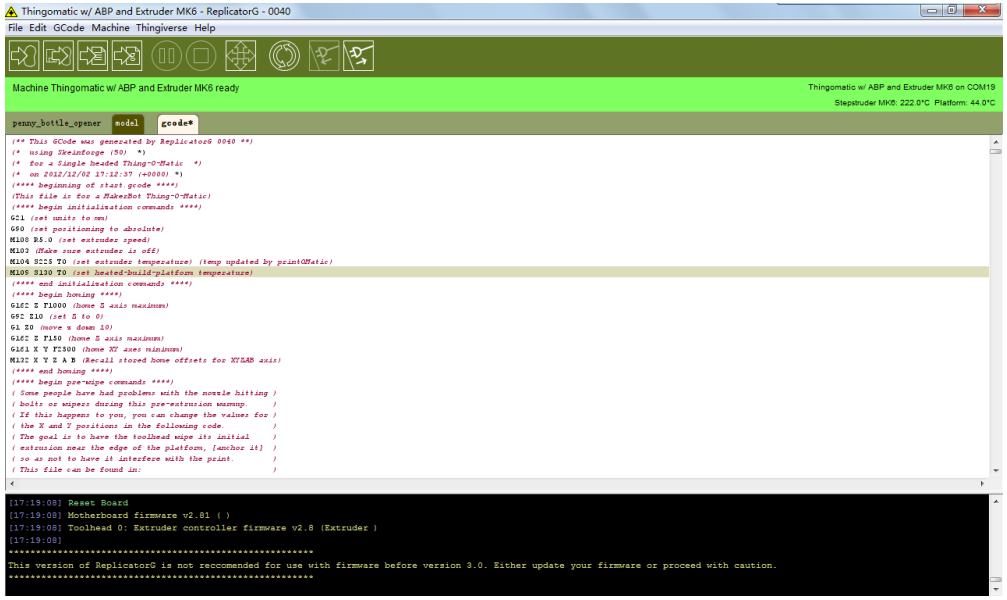
Start MakerBot





Start MakerBot

- Wipe up the printing platform with kitchen towel.
- Click **gcode** as follows and change the code line M109 S100 T0 to M109 S130 T0

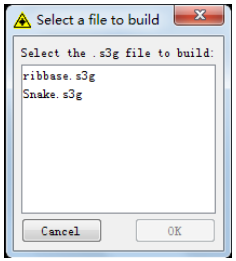


Start to Print

- Click Build:  (Wait for printing from PC)
- Or print from SD card – Eject the SD card from the computer and put the card in the MakerBot.

Start to Print

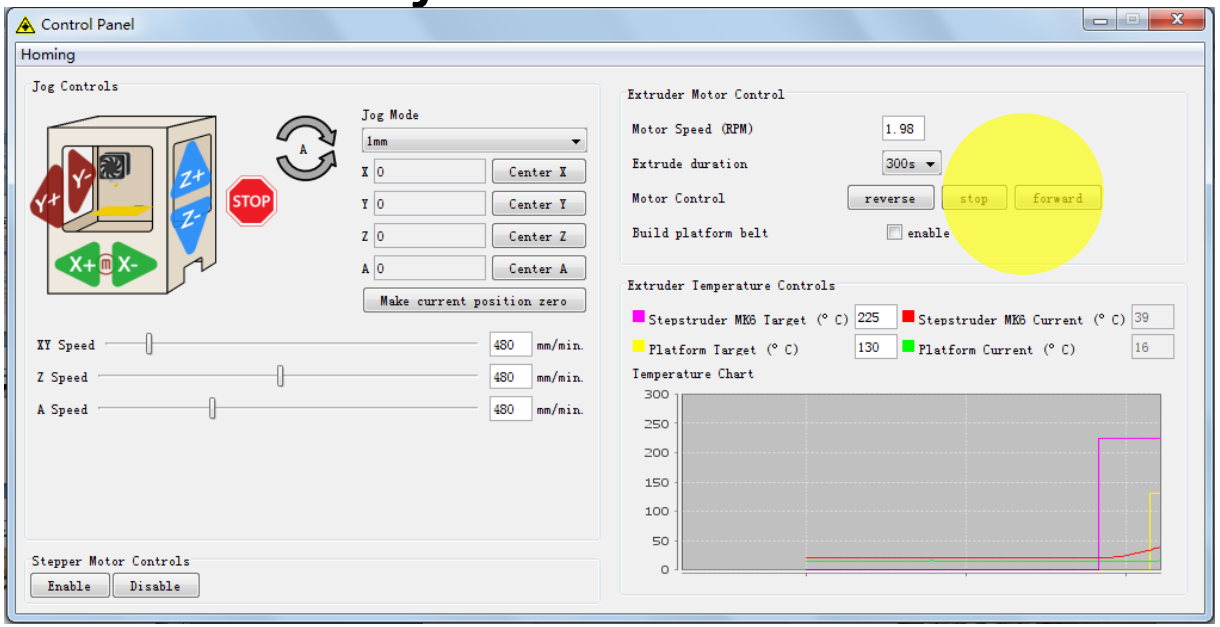
- Click Build from SD card icon: 
- Choose your file from the list of items on the card. Click **OK**!

  (if you see nothing in the list: close the popup, remove the card from the MakerBot, re-insert, and try again) 

- Unplug the USB cable. You can start preparing your next print once unplugged because the MakerBot is using the SD card, not the computer, to run the print job.

Take printed model out

- Wait for 3 minutes after Makerbot finishing printing, then click Control Panel icon  or press Ctrl + J or Select Control Panel from Machine Menu. And click Build platform belt **enable** to eject the model.



Finish Printing

- When the print finished, click  icon
- Click  for moving print platform to a suitable position such as the center of the MakerBot
- Turn off the MakerBot and unplug USB cable and power cord